

Canada - United States

Great Lakes Binational Toxics Strategy

**A Strategy for the Virtual Elimination
of Persistent Toxic Substances in
the Great Lakes Basin**

- A beyond compliance multi-partnership effort -

The Great Lakes: A Precious Resource

- 20% of world fresh surface water supply
- 33 million people; 9 million Canadians
- 45% of Canadian industry
- 33% of US Manufacturing
- 25% of Canadian agriculture
- \$180 billion in Canada-U.S. trade
- \$450 million fishery industry
- 1.5 million recreational boaters

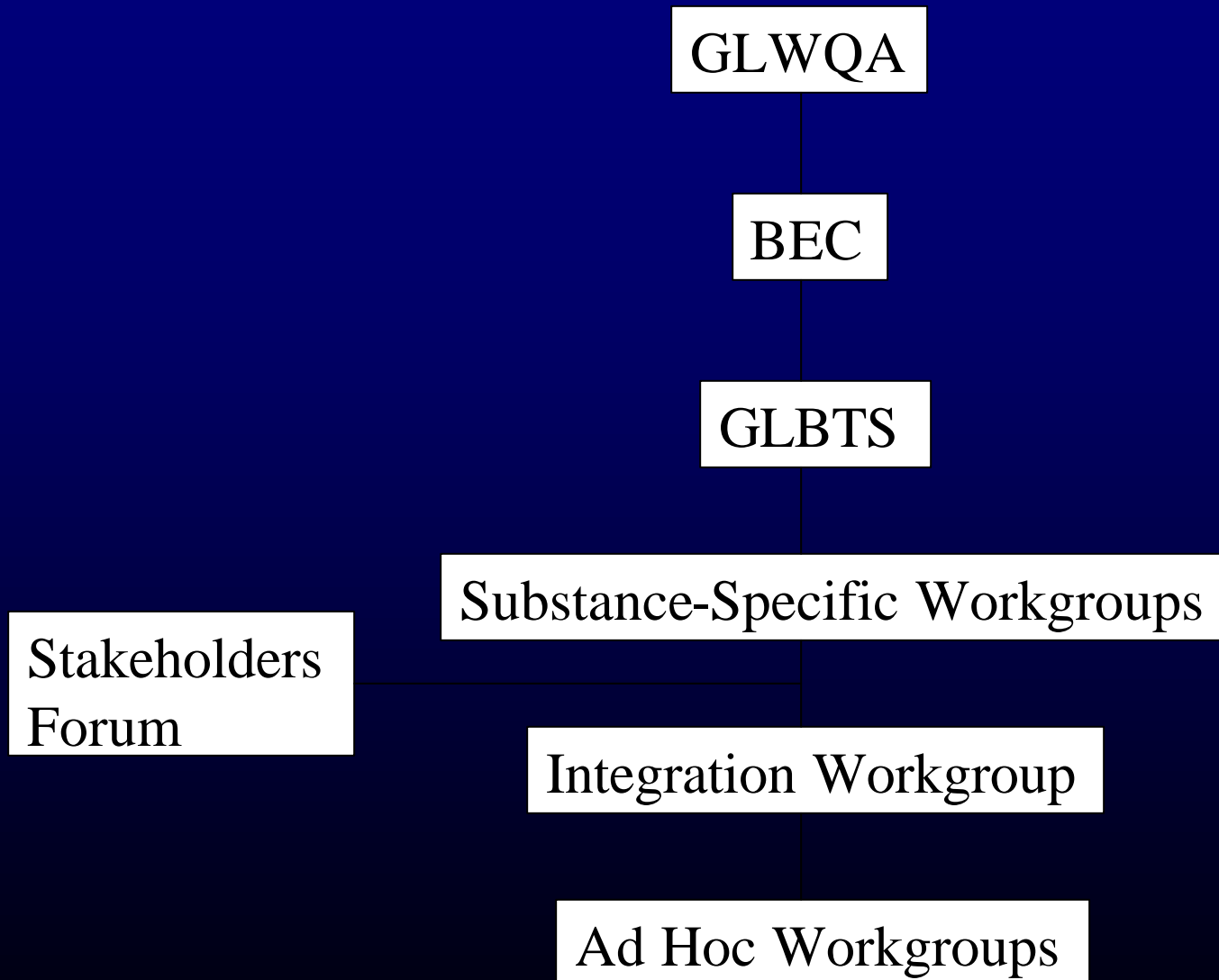


Great Lakes Binational Toxics Strategy

Signed on April 7, 1997



GLBTS Framework



Strategy Linkages

- International UNEP/POPs
- Continental CEC/NARAP
- Bilateral CA/US GLWQA
- National TSMP/CEPA/PBTI
CWS

- **BEC** - charged with coordinating the implementation of the binational aspects of the 1987 Great Lakes Water Quality Agreement
- **Integration Workgroup** - address issues relevant to but falling outside the scope of the workgroups that are addressing specific Strategy substances

- **Substance-Specific Workgroup** - formed around a specific challenge or substance. They use the four step methodology as a framework for structuring actions and activities
- **Stakeholder Forum** - serves as a general meeting of the entire stakeholder community, members of the public, and any other interested party, and takes place approximately twice a year.

Key Components of the Strategy

- Common List of Toxic, Persistent, Bioaccumulative Substances
- Quantitative Targets and Timelines Track to Virtual Elimination
- A Straightforward 4 Step Analytical Framework for Action
- An Open Transparent, Accountable Process to Engage the Great Lakes Community

Strategy Substances

Level I - for Immediate Action

- **Benzo(a)pyrene**
- **Chlordane, toxaphene**
- **Aldrin/dieldrin**
- **Hexachlorobenzene**
- **DDT & Metabolites**
- **Alkyl-Lead**
- **Mercury and compounds**
- **Mirex, PCBs**
- **Octachlorostyrene**
- **Dioxins and Furans**

Analytical Framework

4 Step Process

- Information Gathering
- Analyze Current Controls and Programs
- Identify Cost Effective Options
- Implement Actions

Challenges

- By Substance
- Measurable Interim Targets Tracking to Virtual Elimination
- Timelines for Interim Targets
- Builds on Actions Underway Yet Poses a Challenge to Achieve
- Designed to Engage all Sectors of the Community

PCBs

PCB Challenge

❖ United States

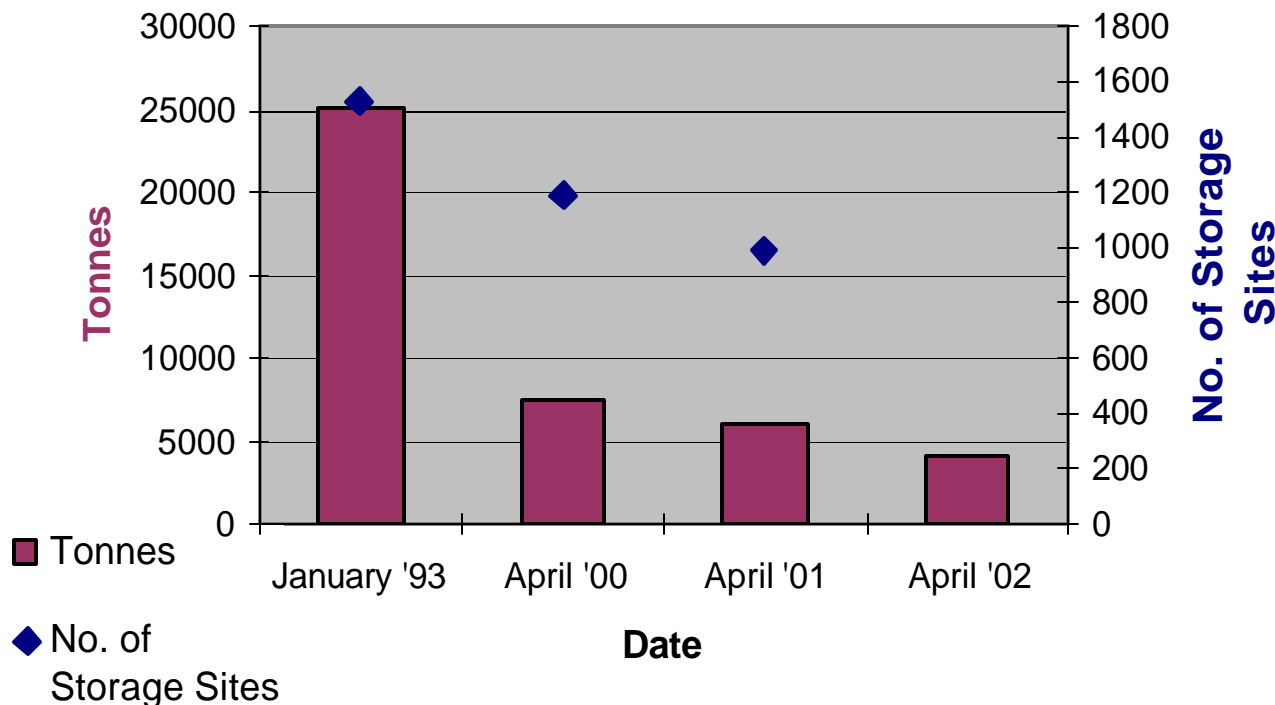
- Seek by 2006 a 90% reduction nationally of high-level PCBs in electrical equipment
- 90% reduction will be met by 2006

❖ Canada

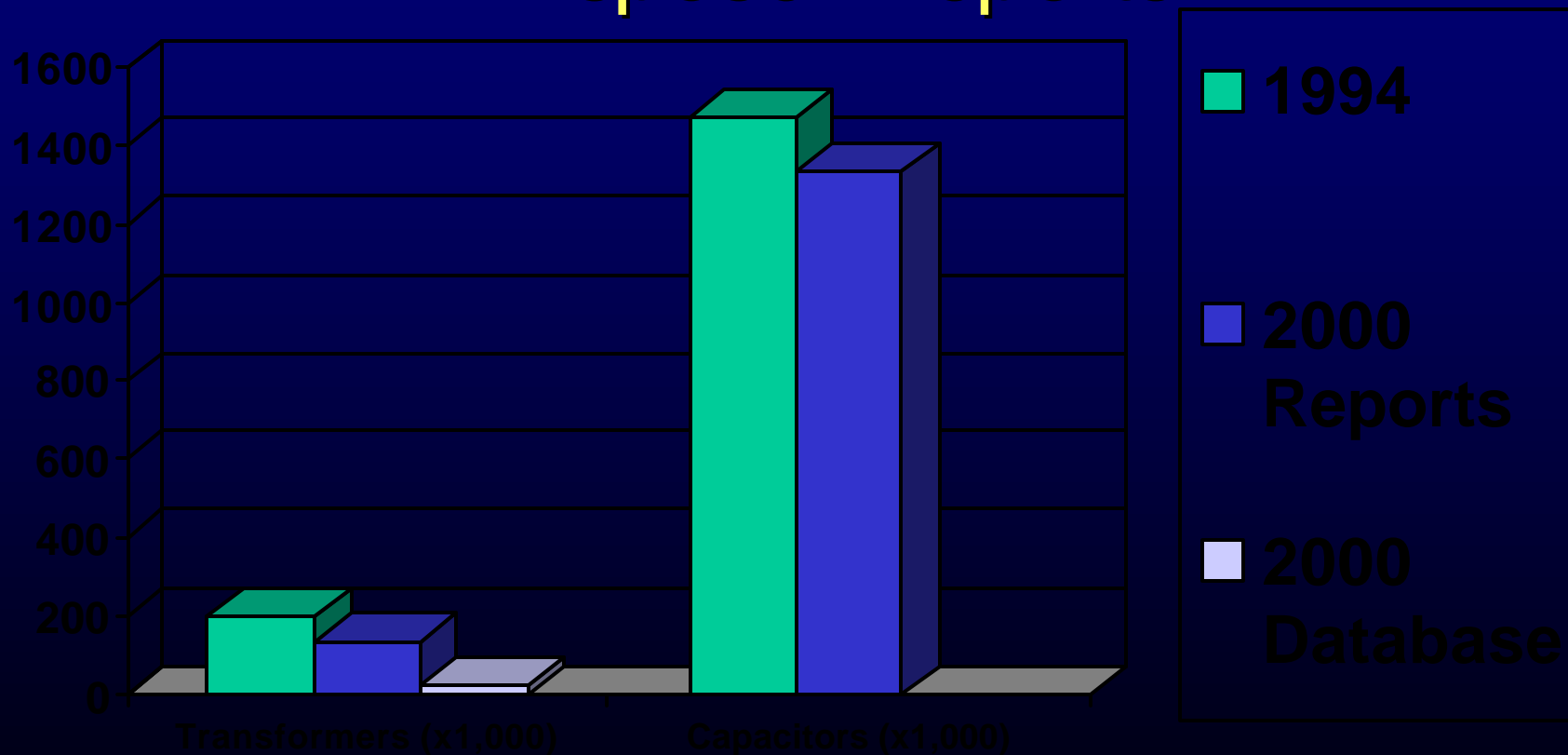
- Seek by 2000 a 90% reduction in the Great Lakes Basin of high-level (>1%) PCB wastes
- As of April 2001, approx. 80% of high-level PCB wastes have been destroyed

Canadian Accomplishments

High Level PCBs and No. of Storage Sites in Ontario, Canada



U.S. Accomplishments PCB (>500 ppm) Transformers and Capacitors Based on Annual Disposer Reports



Upcoming Actions for Canada/U.S.

- Improve Database Tracking for monitoring current In- Use, Storage and Destruction of PCB
- Identify major industry sectors in GLB
- Continue seeking PCB reduction commitments
- Work with Integration Group, ECB(Canada), and major industry associations

Upcoming Actions for Canada/U.S. (cont.)

- Expand GLBTS commitment letters to other Lakes Basin
- Improve and modify outreach and communication tools (e.g. Websites, Outreach Brochures, Info Packages, Fact Sheets etc.)
- Compliance Promotions and Workshops for amended Regulation when come in force

Upcoming Actions for Canada/U.S. (cont.)

- National mailing on PCB reductions (U.S.)
- Publications of draft PBT National Action Plan for PCBs (U.S.)
- Initiatives to address PCB equipment at
 - Federal facilities
 - Mines
 - Minnesota/Lake Superior: Small Quantity PCB Owner Disposal Co-operative - Pilot (GLNPO funded)

Dioxins and Furans

Dioxins / Furans Challenge

❖ United States

- Seek by 2006, a 75% reduction in total releases of dioxins and furans from human activities

❖ Canada

- Seek by 2000, a 90% reduction in releases of dioxins and furans from human activity

Accomplishments

Canada:

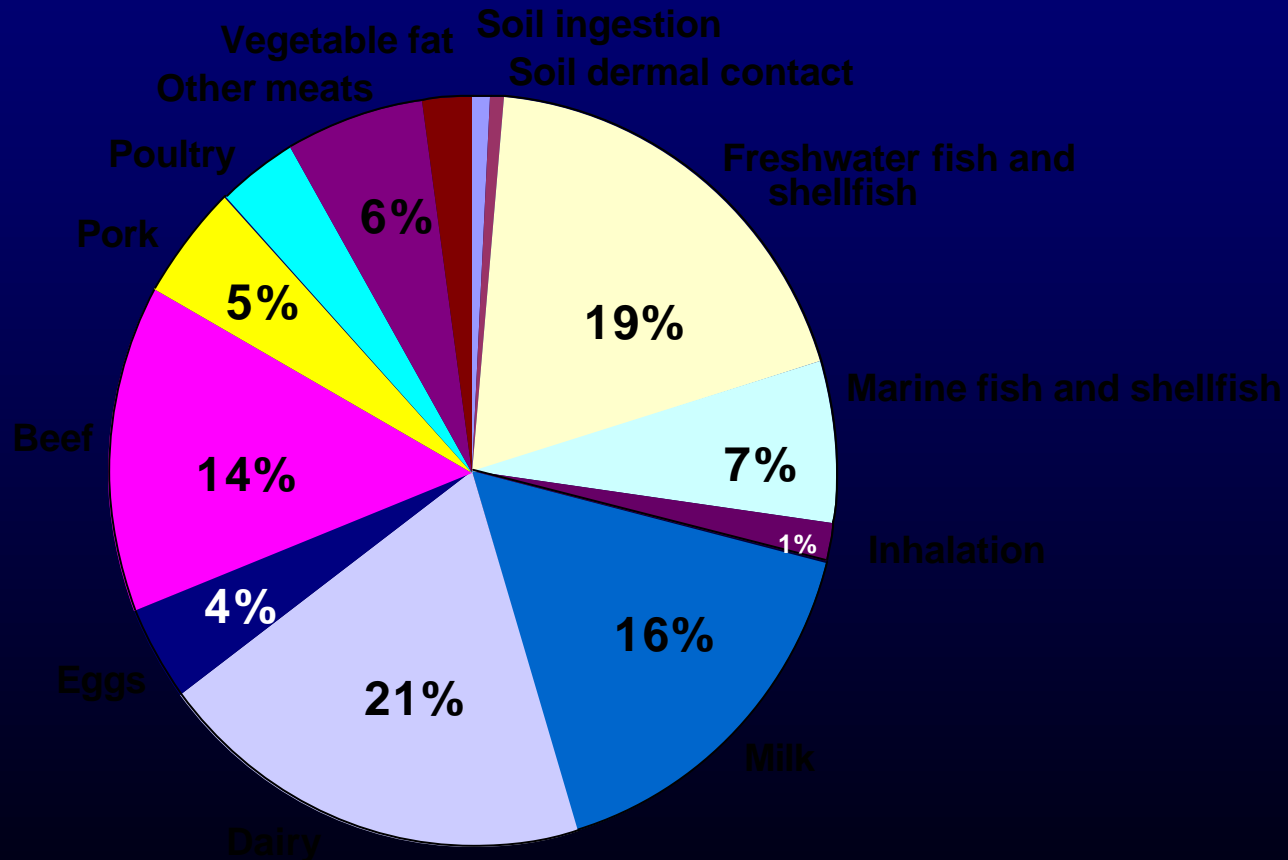
- 79% (49 grams) reduction on total release within GL Basin
- Total release in 2000 = 50.5 grams

United States

- 77% (10,743 grams) reduction on total release within U.S.
- Total release in 1995 = 3,252 grams

U.S. Adult Average Daily Intake of CDDs/CDFs/Dioxin-like PCBs

2000 Draft Estimate: ~ 65 pg TEQ_{DFP}-WHO₉₈/day



Poorly Characterized Sources

- Secondary metal smelting
- Coke production
- Ceramic manufacturing
- Clay processing
- Ferrous and non-ferrous foundries
- Asphalt mixing plants
- Primary magnesium
- TiO_2
- Cu wire recycling
- Res. Wood burning
- Crematoria
- Forest fires
- Brush fires
- Range fires
- Ag burning
- Landfill Fires
- Structural fires
- Landfill flares
- Ash Disposal
- Petroleum refineries

Poorly Characterized Sources (Cont.)

- Rural soil erosion to water
- Urban runoff to surface water
- Utility poles and storage yards
- Landfill fugitive emissions
- Transformer storage yards

Barriers

- Information gaps in inventory
- Engaging stakeholders to help fill gaps
- Lack of data or estimation methodology
- Measurable results for some issues eg. burn barrel are long term (behavioural change)

Upcoming Actions

- Continue implementation of Burn Barrel Strategy
- Review waste management guidelines/strategy for out-of-service utility poles
- Possible testings on residential wood stoves
- Address medium and no priority sectors
- Update information for incinerator ash management and landfill fires
- Address information gaps for Great Lakes Basin- gather information and estimate releases

B(a)P and HCB

HCB and B(a)P Challenge

❖ United States

- Seek by 2006,
Reduce releases in
the Basin

❖ Canada

- Seek by 2000, a
90% reduction in
releases of HCB
and B(a)P

Accomplishments

Estimated Reductions (since ~ 1988):

Canada: (Great Lakes)

- HCB ~ 65% reduction
- B(a)P ~ 45% reduction

United States:

- HCB (nationally) ~ 90% reduction from chlorinated solvents and pesticides manufacturing
- B(a)P (Great Lakes) ~ 65% reduction from coke ovens

Major Source Sectors

B(a)P:

- Coke ovens
- Wood preservation
- Residential wood combustion
- Open burning

HCB:

- Chlorinated solvents and pesticides manufacturing
- Chlorine production
- Pesticide applications
- Waste incineration

Upcoming Actions

- Working with pesticides and other sectors to refine release estimates;
- Meetings with facilities not reporting or with “Low Confidence” NPRI estimates
- Voluntary stack testing
- New prevention projects -- e.g., scrap tires;

Mercury

Mercury Challenge

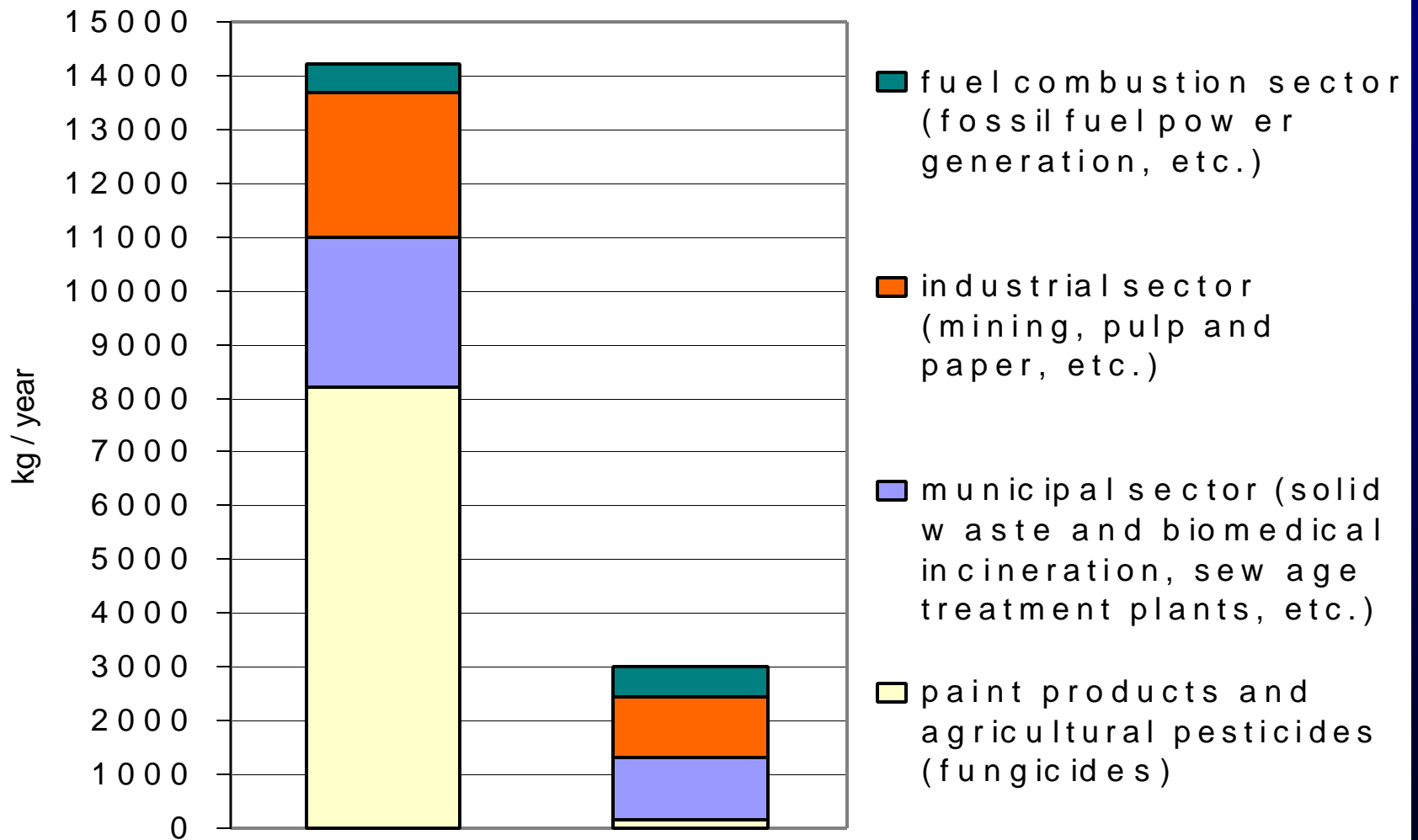
❖ United States

- Seek by 2006 a 50% reduction in mercury use nationwide, and 50% reduction in aggregate of U.S. air emissions nationwide and releases to water in the Great Lakes Basin

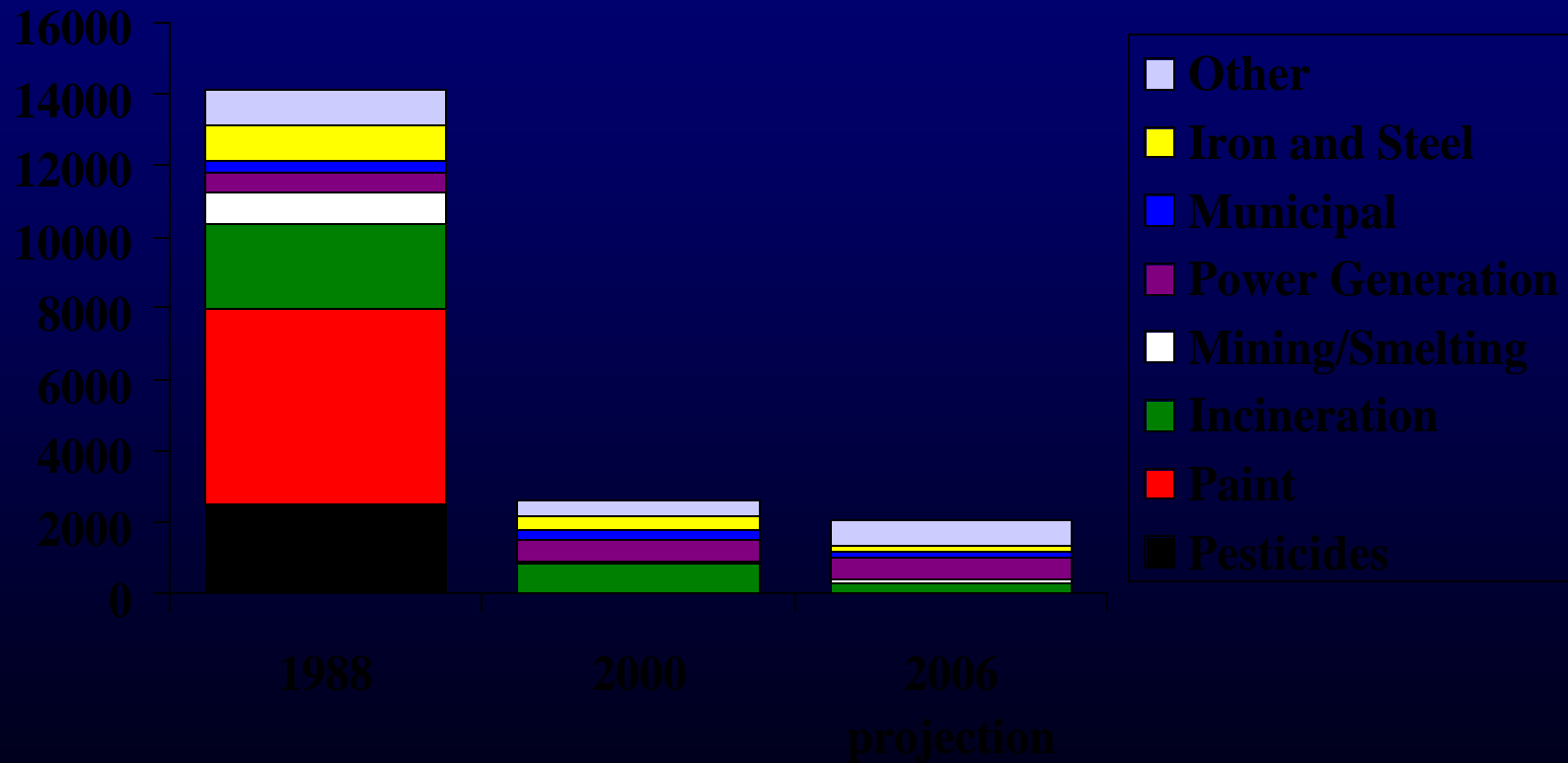
❖ Canada

- Seek by 2000 a 90% reduction in mercury entering the Great Lakes Basin

Mercury Reductions by Sector

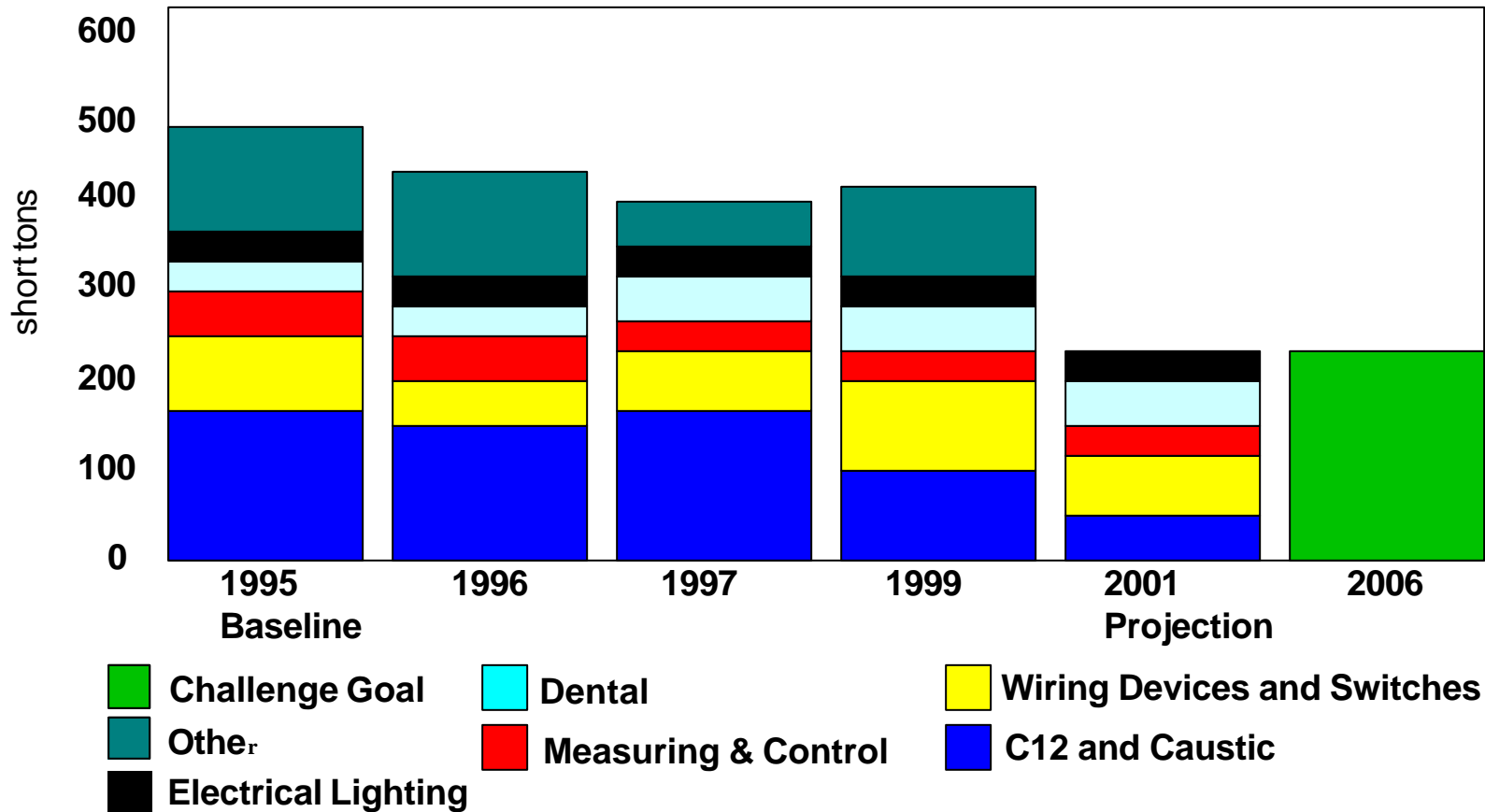


Ontario Mercury Releases (kg)

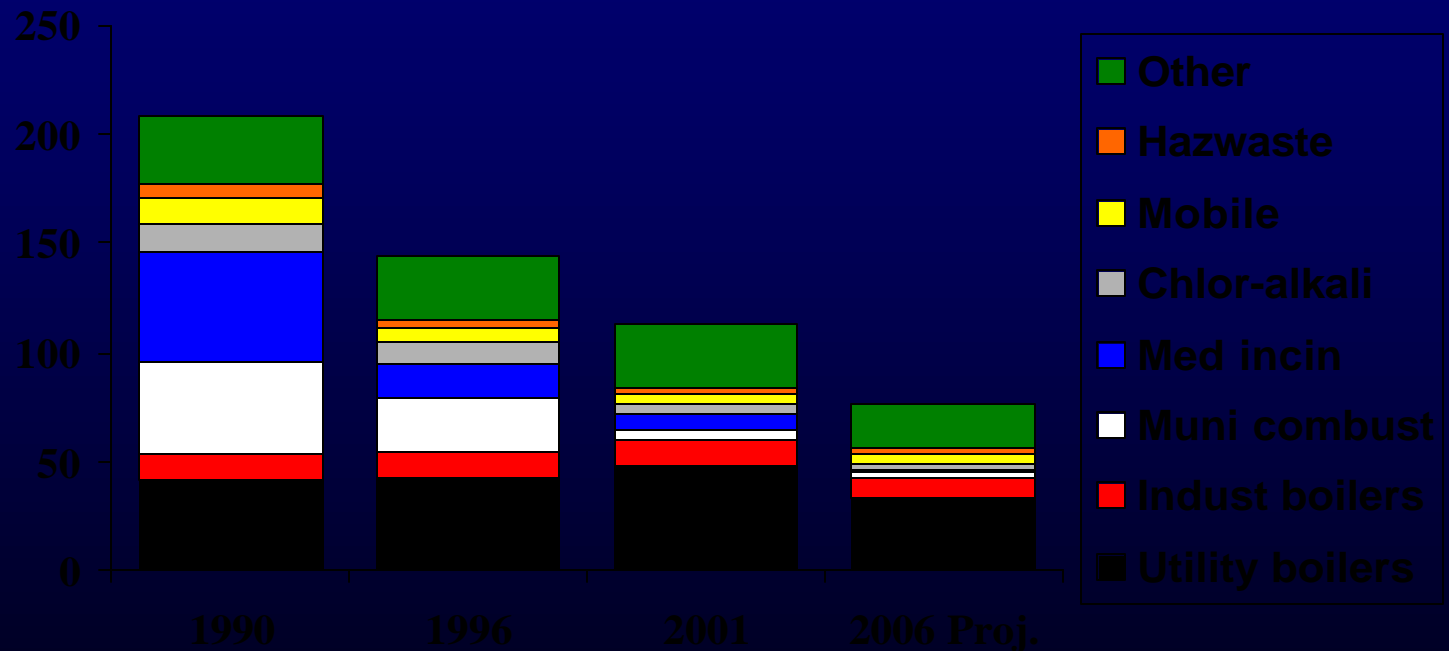


U.S. Mercury Use

1995 Baseline, 2006 Challenge



U.S. Mercury Releases (tons)



Upcoming Actions

- Continued promotion of mercury reductions in steel scrap
- Promote reduced releases from dental mercury – issue focus for next meeting?
- Address industrial boilers? Portland cement?
- Improve website
- Continued tracking of use and release
- Start to track results in the environment

Alkyl-Lead

Alkyl-Lead Challenge

❖ United States (met)

- Confirm by 1998, that there is no longer use in automotive gasoline

❖ Canada (met)

- Seek by 2000, a 90% reduction in use, generation, or release of alkyl-lead

Alkyl-Lead Accomplishments

- U.S. Challenge Achieved
 - Documented in report issued June 2000
- Canadian Challenge Achieved
 - 98% reduction from 1988 to 1997 - documented in report issued January 1999
- Steps 1,2,3 Reports (Sources, uses, regulations, releases, options for reductions):
 - United States
 - Issued June 2000
 - Canada
 - Issued January 1999

Challenge Gap/Beyond the Challenge

Remaining Permitted Uses:

Aviation Gasoline

- US ~ 300 million gallons/year
- (Ontario) ~ 27 million litres/ year

Automobile Racing Gasoline

- **Some racing series in NASCAR, NHRA, SCCA, CART**
- **Total use ~ several 100 thousand gallons/year**

Challenge Gap/Beyond the Challenge

- For Perspective:

Unleaded Gasoline

U.S. ~ 130 billion gallons/year

Ontario ~ 13.3 billion litres/year

Barriers

Aviation Gasoline:

- Safety issue – poor performing alternative gasoline would be life-threatening
- Extensive testing needed for lead-free substitutes for variety of engine and airframe configurations under spectrum of potential flight conditions
- After development of alternative fuel, distribution system needs to be developed
- Despite gathering momentum and encouraging recent progress in the Coordinating Research Council's research program, lead-free aviation gasoline still several years away

Barriers

Racing Gasoline:

- Development needed for alternative octane-enhancing additives to achieve needed performance
- Alternative additives must be environmentally safe

Upcoming Actions

- Reduction activities on remaining uses national and international in scope
- In U.S., work through National PBT Program
- In both countries, continue discussions with automobile racing organizations and coordinate efforts between U.S. and Canada
- Periodically communicate progress in reductions, technology developments, regulations through GLBTS outlets
- Special meetings/workshops as appropriate for outreach and technology transfer

Level I Pesticides and Octachlorostyrene

Pesticides Challenge

- ❖ **United States (met)**
 - **US Goal by 1998
confirm no longer
use or release of
Strategy pesticides**
- ❖ **Canada (met)**
 - **Goal by 1997,
confirm no longer
use, generation or
release**

Accomplishments

Level I Pesticides

- All uses of the Level I pesticides have been cancelled
- All production facilities have been closed
- Documented in Reports:
 - United States - 2000
 - Canada – 1997
- Voluntary collections of unused pesticides ongoing

Barriers – Level I Pesticides

- Continued presence of existing stocks of pesticides
- Contaminated sites not yet remediated have potential to release Level I pesticides to the Great Lakes
- Continued usage in other parts of the world
- Absence of cost-effective alternative to DDT for malaria (mosquito) control

Continuing Actions

Level I Pesticides

- Continue to collect unused stockpiles of Level I pesticides throughout the Great Lakes Region
- Continue clean-up of sites contaminated with Level I pesticides
- Encourage phase-out in other countries
- List upcoming actions, meetings, workshops, partnerships, demonstrations, evaluations, etc.

OCS Challenge

- ❖ **United States (met)**
 - **US Goal by 1998
confirm no longer
release of OCS**
- ❖ **Canada (met)**
 - **Goal by 1997,
confirm no longer
use, generation or
release**

Accomplishments Octachlorostyrene

- Documented sharp declines in environmental concentrations since the 1960s
- OCS has been virtually eliminated in current releases
- Past inadvertent releases from chemical production reduced or eliminated by improved production methods
- Documented in Reports:
 - United States - December 2000
 - Canada - June 2000
- Work Group tasks completed

Challenge Gap/Beyond the Challenge Octachlorostyrene

- Continue to explore possible link of OCS production coincidental to hexachlorobenzene and dioxin production
- Collect additional monitoring data to confirm that OCS levels continue to decline

Long-Range Transport Challenge

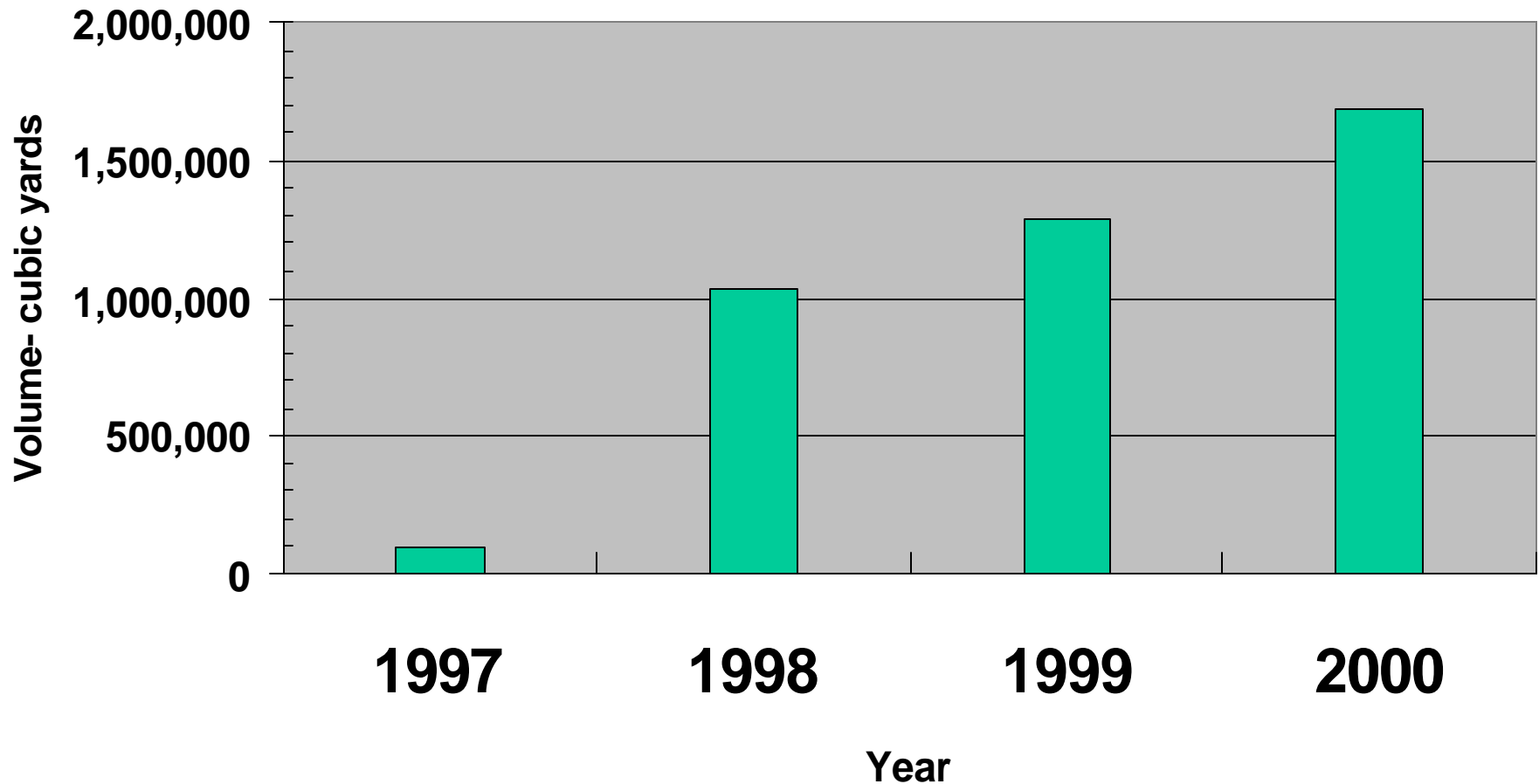
- ❖ Assess atmospheric inputs of Strategy substances to the Great Lakes.
 - To evaluate and report jointly on the contribution and significance of long-range transport of Strategy substances from worldwide sources.
 - If ongoing long-range sources are confirmed, work within international frameworks to reduce releases of such substances

A bilateral experts workshop planned for Spring 2003

Sediments Challenge

- ❖ Complete or be well advanced in remediation of priority sites with contaminated bottom sediments in the Great Lakes Basin by 2006
- ❖ Track sediment remediation activities occurring in the Great Lakes Basin, and track volumes of contaminated sediments removed in a given year, as well as the mass of GLBTS substances associated with those volumes

Cumulative Sediment Volume Remediated in U.S. Since 1997



Challenges Ahead

- ❖ Confirm positive trends in the environment from source reductions;
- ❖ Continue efforts to reduce Level I substances that have not yet met their challenge goals;
- ❖ Define next steps to reach closure for Level I substances that have met their challenge goals;
- ❖ Continue to monitor air, water, sediments, fish and other biota in the Great Lakes Basin ecosystem;

Challenges Ahead

- ❖ Consider impacts to the Great Lakes Basin ecosystem from Level II substances and other potential emerging chemicals of concern;
- ❖ Continue to report efforts to remediate contaminated sediments; and
- ❖ Work cooperatively with national and international efforts to address impacts of long-range transport.

Great Lakes Binational Toxics Strategy on the Web:

[*www.binational.net*](http://www.binational.net)



“....toward the goal of virtual elimination of persistent toxic substances resulting from human activity, particularly those which bioaccumulate, from the Great Lakes Basin, so as to protect and ensure the health and integrity of the Great Lakes ecosystem.”